Reporting Period: January 1 – December 31, 2023

2023 Performance REPORT

Owen Sound Wastewater Treatment Plant

2023 Annual Performance Report

Owen Sound Wastewater Treatment Plant

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2. Calibration Records
3. Bio-solids Post Application Reports
4. MECP Correspondence
5. Bypass & Overflow Incident Final Reports

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# **Background**

**The Owen Sound Wastewater Treatment Plant was originally constructed in 1962 and expanded in 1978. The Headworks of the plant was upgraded in 2010 to include automated bar screens and grit removal. The City then undertook a 48-million-dollar Secondary Treatment Biological Aerated Filtration (BAF) System upgrade that reached substantial completion on August 24, 2017. The WWTP has a rated capacity of 24,545 m3/d and a Peak Daily Flow Rate of 65,000 m3/d. This report is written as a requirement under section 12 (6) of the Amended Environmental Compliance Approval Number 6575-AFTK6S for the Owen Sound Wastewater Treatment Plant.**

# **Summary and Interpretation of Flow Data**

**The following figures show the Average Day, Peak Daily and Instantaneous Flow, Monthly Flow and Annual Historical Flow through the Wastewater Treatment Plant.**

Figure 1

Flow trends for the Owen Sound WWTP were in the typical range.

The Average Daily Flow for 2023 was 12,744 m3/d, 52% of the plant’s capacity of 24,545 m3/d.

Figure 2

**2023 spring flows were higher than in 2022. The highest peak instantaneous flow was 81,396m3, recorded on April 5th, 2023, due to heavy rain and thunderstorms accumulating 52.4mm of precipitation.**

Figure 3

Figure 4

# **Collection System Overview, Flows and Overflows**

**The Owen Sound Collection System consists of seven (7) minor and one (1) major sewage pumping stations that pump sewage to the WWTP.**

**Combined Sewer Overflow (CSO) locations in the system are monitored during peak wet weather events. There were three wet weather overflows in 2023. The following charts and tables show flow through the major Westside Sewage Pump Station and the CSO events for 2023.**

Figure 5

Figure 6

**The 2023 Total Annual Flow through the West Side Sewage Pumping Station was** 1,024,605.7m3.

**Table 1 Owen Sound Collection System Overflows 2023**

**The following table shows the Collection System overflows for 2023 caused by heavy rain. Samples taken at OS-19A are representative of CSO locations OS-22, OS-12, OS-11, OS-16 & OS-17, as per MECP written correspondence.**

**2023 Owen Sound Collection System Overflows**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Quarter** | **Location** | **Date (2023)** | **Volume (m3)** | **BOD5 (mg/l)** | **TSS (mg/l)** | **TP (mg/l)** | **E-Coli cfu/100ml** | **TKN (mg/l)** |
|   |   |   |   |   |   |   |   |   |
| 1 | OS-6 | 5-Apr | 798 | N/A | N/A | N/A | N/A | N/A |
|   | OS-11 | 5-Apr | 3534 | \* | \* | \* | \* | \* |
|   | OS-12 | 5-Apr | 3990 | \* | \* | \* | \* | \* |
|   | OS-16 | 5-Apr | 2850 | \* | \* | \* | \* | \* |
|   | OS-19A | 5-Apr | 1078 | 92 | 322 | 1.01 | Overgrown | 3.5 |
|   | OS-22 | 5-Apr | 2280 | \* | \* | \* | \* | \* |
|   | Westside EQ Tank | 5-Apr | 2938 | 19 | 37 | 0.35 | Not Required | 2.4 |
| 3 | OS-19A | 6-Jul | 24 | 123 | 258 | 1.36 | 144000 | 7.5 |
| 3 | OS-19A | 12-Aug | 53.89 | 98 | 292 | 2.07 | 1010000UAL | 10 |
|  | **Total** |  | **17,546** |   |   |

* **\* Representative of OS-19A sample results.**
* **No sample taken at OS-6 due to unsafe conditions for sampling.**
* **Overgrown- R**efers to bacterial growth covering the surface of the membrane filter or culture media such that colonies are not discrete and therefore cannot be quantified (i.e., there are too many to count reliably.)
* UAL- Sample age exceeds recommended holding time of 48 hours.

# **Influent Monitoring (Raw Sewage)**

**Weekly composite samples are taken at the Inlet Works building and sent to an accredited lab as part of the Influent Monitoring requirement of the ECA.**

 **Table 2 shows the monthly averages of the required** **parameters.**

**Influent grab samples are taken and analyzed in-house by plant operators for pH and temperature. The recorded influent pH range was between 6.76-8.19, and the temperature range was 8.8-22.3 degrees Celsius.**

**Table 2 Influent Monitoring**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Month | Raw BOD5 | Raw TSS | Raw A+A(N) | Raw TKN | Raw TP |
| 2023 | (mg/l) | (mg/l) | (mg/l) | (mg/l) | (mg/l) |
| Jan Avg. | 138.8 | 154.4 | 12.86 | 16.64 | 1.99 |
| Feb Avg. | 167.75 | 120.75 | 13.5 | 17.8 | 2.22 |
| Mar Avg. | 127 | 302 | 12.4 | 17.08 | 1.89 |
| Apr Avg. | 141.5 | 180 | 11.03 | 15.13 | 1.71 |
| May Avg. | 141.6 | 177.6 | 14.3 | 18.14 | 2.33 |
| Jun Avg. | 191 | 208.25 | 17.85 | 27.35 | 3.04 |
| Jul Avg. | 157 | 177.4 | 23.32 | 28.6 | 3.44 |
| Aug Avg. | 139 | 155.75 | 21.10 | 25.85 | 3.22 |
| Sep Avg | 191.5 | 183.75 | 25.23 | 31.08 | 3.45 |
| Oct Avg. | 168.4 | 154.2 | 16.54 | 19.34 | 2.19 |
| Nov Avg. | 157.75 | 168 | 17.95 | 21.43 | 2.54 |
| Dec Avg. | 144.8 | 170.8 | 15.45 | 19.5 | 2.24 |
| *Annual Avg.* | *155.5* | *179.4* | *16.79* | *21.49* | *2.52* |

**While there is little ability to control the raw sewage characteristics, seasonal variations occur due to temperature and precipitation fluctuations affecting the influent's dilution levels.**

# **Effluent Monitoring and Compliance**

***Provincial*:**

**Weekly composite samples are taken at the WWTP outfall and sent to an accredited lab for required Effluent Monitoring analysis. The WWTP ECA establishes effluent objectives and limits. The following tables show these and the achieved monthly averages for the required parameters.**

 **Table 3 CBOD5**

|  |  |  |  |
| --- | --- | --- | --- |
| Month | Concentration | Monthly Average | Concentration |
| 2023 | Objective (mg/l) | Concentration Limit (mg/l) | Achieved (mg/l) |
| Jan | 12 | 15 | 7.0 |
| Feb | 12 | 15 | 6.75 |
| Mar | 12 | 15 | 5.25 |
| Apr | 12 | 15 | 5.75 |
| May | 12 | 15 | 4.0 |
| Jun | 12 | 15 | 6.5 |
| Jul | 12 | 15 | 6.0 |
| Aug | 12 | 15 | 6.5 |
| Sep | 12 | 15 | 8.75 |
| Oct | 12 | 15 | 6.2 |
| Nov | 12 | 15 | 5.0 |
| Dec | 12 | 15 | 4.75 |

**No Effluent CBOD5 concentrations were exceeded.**

**Table 4 Total Suspended Solids**

|  |  |  |  |
| --- | --- | --- | --- |
| Month | Concentration | Monthly Average | Concentration |
| 2023 | Objective (mg/l) | Concentration Limit (mg/l) | Achieved (mg/l) |
| Jan | 12 | 15 | 7.0 |
| Feb | 12 | 15 | 6.5 |
| Mar | 12 | 15 | 6.25 |
| Apr | 12 | 15 | 6.25 |
| May | 12 | 15 | 5.4 |
| Jun | 12 | 15 | 8.75 |
| Jul | 12 | 15 | 9.0 |
| Aug | 12 | 15 | 11.0 |
| Sep | 12 | 15 | 11.0 |
| Oct | 12 | 15 | 12.0 |
| Nov | 12 | 15 | 7.5 |
| Dec | 12 | 15 | 6.3 |

**No Effluent TSS concentrations were exceeded.**

**Table 5 Total Ammonia-N**

|  |  |  |  |
| --- | --- | --- | --- |
| Month | Concentration | Monthly Average | Concentration |
| 2023 | Objective (mg/l) | Concentration Limit (mg/l) | Achieved (mg/l) |
| Jan | 3.2 | 5 | 0.74 |
| Feb | 3.2 | 5 | 0.78 |
| Mar | 3.2 | 5 | 0.85 |
| Apr | 3.2 | 5 | 1.00 |
| May | 1.6 | 3 | 1.56 |
| Jun | 1.6 | 3 | 1.03 |
| Jul | 1.6 | 3 | 0.76 |
| Aug | 1.6 | 3 | 0.55 |
| Sep | 1.6 | 3 | 0.55 |
| Oct | 1.6 | 3 | 0.58 |
| Nov | 1.6 | 3 | 0.63 |
| Dec | 3.2 | 5 | 0.70 |

**No Effluent Total Ammonia-N concentrations were exceeded.**

**Table 6 Total Phosphorus**

|  |  |  |  |
| --- | --- | --- | --- |
| Month | Concentration | Monthly Average | Concentration |
| 2023 | Objective (mg/l) | Concentration Limit (mg/l) | Achieved (mg/l) |
| Jan | 0.8 | 1 | 0.34 |
| Feb | 0.8 | 1 | 0.33 |
| Mar | 0.8 | 1 | 0.33 |
| Apr | 0.8 | 1 | 0.36 |
| May | 0.5 | 0.8 | 0.38 |
| Jun | 0.5 | 0.8 | 0.37 |
| Jul | 0.5 | 0.8 | 0.43 |
| Aug | 0.5 | 0.8 | 0.39 |
| Sep | 0.5 | 0.8 | 0.59 |
| Oct | 0.8 | 1 | 0.40 |
| Nov | 0.8 | 1 | 0.29 |
| Dec | 0.8 | 1 | 0.36 |

**Effluent Total Phosphorus did exceed the Objective in September, but not Limit.**

**Table 7 E. Coli**

|  |  |  |  |
| --- | --- | --- | --- |
| Month | Concentration | Monthly Average | Concentration |
| 2023 | Objective (count/100mL) | Concentration Limit (count/100mL) | Achieved (count/100mL) |
| Jan | 150 | 200 | 38 |
| Feb | 150 | 200 | 13 |
| Mar | 150 | 200 | 3 |
| Apr | 150 | 200 | 17 |
| May | 150 | 200 | 5 |
| Jun | 150 | 200 | 16 |
| Jul | 150 | 200 | 3 |
| Aug | 150 | 200 | 38 |
| Sep | 150 | 200 | 43 |
| Oct | 150 | 200 | 6 |
| Nov | 150 | 200 | 30 |
| Dec | 150 | 200 | 17 |

 Note: Monthly Geometric Mean Density

**No Effluent E.Coli concentrations were exceeded.**

**Table 8 Total Residual Chlorine**

|  |  |  |  |
| --- | --- | --- | --- |
| Month | Concentration | Monthly Average | Concentration |
| 2023 | Objective (mg/l) | Concentration Limit (mg/l) | Achieved (mg/l) |
| Jan | N/A | 0.02 | 0.004 |
| Feb | N/A | 0.02 | 0.006 |
| Mar | N/A | 0.02 | 0.007 |
| Apr | N/A | 0.02 | 0.004 |
| May | N/A | 0.02 | 0.010 |
| Jun | N/A | 0.02 | 0.008 |
| Jul | N/A | 0.02 | 0.012 |
| Aug | N/A | 0.02 | 0.013 |
| Sep | N/A | 0.02 | 0.013 |
| Oct | N/A | 0.02 | 0.011 |
| Nov | N/A | 0.02 | 0.012 |
| Dec | N/A | 0.02 | 0.005 |

 **Total Residual Chlorine did not exceed Limit.**

**Table 9 Annual Average Waste Loading**

|  |  |  |
| --- | --- | --- |
| Effluent Parameter   | Annual Average Waste | Actual Annual |
| Loading Limit(kg/day) | Loading (kg/day) |
| CBOD5  | 368 | 76.97 |
| Total Suspended Solids  | 368  | 102.72  |
| Total Ammonia-N |   |   |
| (Non-Freezing) | 73.6 | 8.81 |
| (Freezing) | 122.7 | 12.45 |
| Total Phosphorus |   |   |
| (Non-Freezing) | 19.6 | 4.46 |
| (Freezing) | 24.5 | 5.23 |
| E. Coli  | N/A |  N/A |
| Total Residual Chlorine | 0.49 | 0.11 |

 **No Annual Average Waste Loading parameters were exceeded.**

**The pH of the effluent was maintained between 6.0 to 9.5, inclusive, at all times. The annual minimum recorded pH was 6.66 & maximum was 7.96 with an average of 7.40.**

**In the above charts, any *Concentrations Achieved* shown in red either exceeded the ECA’s Objective or Limit for that parameter. All exceedances were reported to the MECP Water Supervisor.**

**No Ministry of the Environment, Conservation and Parks (MECP) inspection occurred on the Owen Sound Wastewater System in 2023.**

**b) *Federal:***

Final Effluent samples were sent to comply with the Wastewater Systems Effluent Regulations (WSER) acute lethality testing requirements per section 11 of the Regulations.

The Acute Lethality testing requires a 20-litre Final Effluent sample to be sent to an accredited lab quarterly. At the lab, they introduce Rainbow Trout into the effluent in a controlled environment for 96 hours to monitor the fish for impairment and mortality. It is critical to keep the Final Effluent Total Residual Chlorine monthly average concentration less than 0.02 mg/l for compliance and this toxicity test.

Table 10 **Acute Lethality Testing**

|  |  |  |
| --- | --- | --- |
| **Date** | **Mean Impairment** | **Mean Mortality** |
| Jan 4, 23 | 0% | 0% |
| Apr 3, 23 | 0% | 0% |
| Jul 5, 23 | 0% | 0% |
| Oct 3, 23 | 0% | 0% |

 **The Acute Lethality testing results were a 0% fish kill.**

# **Operating Issues and Corrective Actions**

**Under normal conditions, the Biological Aerated Filter (BAF) Secondary Plant produces effluent exceeding the ECA requirements. Issues are rare, but when they occur, troubleshooting requires staff to follow procedures and perform checks unique to the BAF system; conventional Activated Sludge treatment plant practices have no analogous place in the BAF process. Plant data is monitored and analyzed by Veolia Water Technologies (BAF Supplier), who can assist with BAF operating issues.**

**As mentioned above, there was one Effluent Objective exceedance in 2023. The local MECP Provincial Officer was notified as required. Coagulant dosing and primary sludge pumping adjustments were made to correct this issue.**

**On the morning of April 5th, a series of heavy thunderstorms crossed through the Owen Sound area. An apparent lightning strike damaged various PLC components of the Grit and Chemical processes. Upon arrival, wastewater operators were able to run the processes in manual mode until the necessary PLC replacement/repairs were made by our SCADA integrator and electrician. Most spare PLC parts were on-hand and subsequently restocked.**

# **Chemical Use**

**The following tables summarize chemical usage at the WWTP for 2023.**

**Table 11 Sodium Hypochlorite (Disinfectant)**

|  |  |  |  |
| --- | --- | --- | --- |
| Month | Average Daily | Total Monthly | Average Daily |
| 2023 | Usage (kg) | Usage (kg) | Dosage (mg/l) |
| Jan | 34.75 | 1023.06 | 2.41 |
| Feb | 36.54 | 813.77 | 2.41 |
| Mar | 31.04 | 962.36 | 2.15 |
| Apr | 35.9 | 1077.06 | 2.1 |
| May | 28.97 | 898.14 | 2.37 |
| Jun | 21.27 | 638.19 | 2.51 |
| Jul | 21.78 | 675.3 | 2.27 |
| Aug | 23.2 | 719.21 | 2.28 |
| Sep | 24.53 | 736.04 | 2.76 |
| Oct | 33.33 | 1033.16 | 2.15 |
| Nov | 30.61 | 918.37 | 2.69 |
| Dec | 34.42 | 1066.98 | 2.35 |
| 2023 Annual | 29.66 | 10824.97 | 2.39 |
| 2022 Annual | 28.69 | 10471.42 | 2.61 |
| 2021 Annual | 27.51 | 10040.6 | 2.06 |

**Table 12 Ferric Chloride (Coagulant)**

|  |  |  |  |
| --- | --- | --- | --- |
| Month | Average Daily | Total Monthly | Average Daily |
| 2023 | Usage (kg) | Usage (kg) | Dosage (mg/l) |
| Jan | 44.53 | 1380.36 | 3.14 |
| Feb | 59.11 | 1655.21 | 4.03 |
| Mar | 55.99 | 1735.56 | 4.01 |
| Apr | 56.99 | 1709.67 | 3.53 |
| May | 66.22 | 2052.8 | 5.58 |
| Jun | 73.01 | 2190.27 | 8.63 |
| Jul | 73.05 | 2264.69 | 7.58 |
| Aug | 72.92 | 2260.55 | 6.99 |
| Sep | 79.20 | 2376.14 | 8.92 |
| Oct | 81.73 | 2533.55 | 6.60 |
| Nov | 73.39 | 2201.83 | 6.53 |
| Dec | 62.44 | 1935.56 | 4.30 |
| 2023 Annual | 66.56 | 25398.03 | 5.82 |
| 2022 Annual | 70.71 | 26374.56 | 6.89e |
| 2021 Annual | 70.92 | 27721.63 | 5.80 |

**Table 13 Calcium Thiosulphate (Captor)-Dechlorination Agent**

|  |  |  |  |
| --- | --- | --- | --- |
| Month | Average Daily | Total Monthly | Average Daily |
| 2023 | Usage (kg) | Usage (kg) | Dosage (mg/l) |
| Jan | 118.64 | 3677.70 | 8.11 |
| Feb | 111.88 | 3132.73 | 7.76 |
| Mar | 108.47 | 3362.50 | 7.92 |
| Apr | 126.87 | 3806.05 | 7.91 |
| May | 95.90 | 2972.76 | 7.80 |
| Jun | 69.18 | 2075.30 | 8.06 |
| Jul | 84.04 | 2605.19 | 8.82 |
| Aug | 95.09 | 2947.90 | 9.36 |
| Sep | 88.68 | 2660.5 | 9.84 |
| Oct | 117.27 | 3635.39 | 8.96 |
| Nov | 107.31 | 3219.43 | 9.45 |
| Dec | 120.59 | 3538.26 | 8.47 |
| 2023 Annual | 126.11 | 44391.9 | 8.54 |
| 2022 Annual | 101.14 | 36916.54 | 9.60 |
| 2021 Annual | 107.77 | 31321.55 | 8.30 |

#

# **Low Chlorine Residual Summary**

**There is a Standard Operating Procedure to report to the Owen Sound Water Treatment Plant any pre-dechlorination Total Residual Chlorine samples below 0.1mg/l. Although this is not required under the current ECA, this ensures the Water Plant is aware of any disinfection issues.**

**There were 5 Low Total Chlorine Residual incidents, shown below:**

|  |  |
| --- | --- |
| Total # of Incidents in 2022 | 14 |
| Total # of Incidents in 2021 | 7 |
| Total # of Incidents in 2020 | 1 |
| Total # of Incidents in 2019 | 10 |
| Total # of Incidents in 2018 | 1 |
| Total # of Incidents in 2017 | 11 |

**Table 14 Low Total Chlorine Residuals**

|  |  |  |
| --- | --- | --- |
| Date | Total Chlorine | WTP Operator |
| 2023 | Residual (mg/l) | Contacted |
| 5-Apr | 0 | Rob M. |
| 5-Oct | 0.02 | Troy P. |
| 8-Oct | 0.09 | Rob M. |
| 13-Oct | 0.03 | Matt F. |
| 16-Oct | 0.05 | Matt F. |

# **Effluent Quality Assurance**

**The following in-house lab frequency chart has been developed for WWTP staff as a guideline to aid in Effluent Quality Assurance.**

**Table 15 Testing Frequency**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
| **Raw Sewage** | pH |  | X |  | X |  | X |  |
| Temperature |  | X |  | X |  | X |  |
| TSS |  | X |  | X |  | X |  |
| COD |  | X |  |  |  |  |  |
|  |
| **Primary Effluent** | TSS |  | X | X | X | X | X |  |
| pH |  | X | X | X | X | X |  |
| Alkalinity |  | X |  |  |  |  |  |
| Reactive Phosphorus as “P” (Filtered) |  | X | X | X | X | X |  |
| Total Ammonia-N |  | X |  | X |  | X |  |
|  |
| **BAF Effluent (Effluent Channel**) | Total Ammonia-N |  | X |  | X |  | X |  |
| Nitrate |  | X |  | X |  | X |  |
| Nitrite |  | X |  | X |  | X |  |
| pH |  | X |  | X |  | X |  |
| Dissolved Oxygen |  | X |  |  |  |  |  |
|  |
| **Final Effluent** | pH | X | X | X | X | X | X | X |
| Temperature | X | X | X | X | X | X | X |
| TSS | X | X | X | X | X | X | X |
| COD |  | X |  |  |  |  |  |
| Total Ammonia-N |  | X |  | X |  | X |  |
| Nitrate |  | X |  | X |  | X |  |
| Total Phosphorus as “P” (Not Filtered) |  | X |  | X |  | X |  |
| Reactive Phosphorus as “P” (Filtered) | X | X | X | X | X | X | X |
| Total Residual Chlorine (Pre-dechlor) | X | X | X | X | X | X | X |
| Total Residual Chlorine (Post-dechlor) | X | X | X | X | X | X | X |

**Weekly regulatory samples are sent to an external accredited lab and analyzed in-house to compare results, which are usually similar. A certified third-party technician inspects and calibrates major effluent monitoring equipment annually. Asset Management software is used at the WWTP as a computerized maintenance management system that generates work orders to complete preventative equipment maintenance.**

**A Wastewater Quality Management System (WWQMS) was implemented in June 2019. This is a Wastewater System Operational Plan prepared per the Ontario Drinking Water Quality Management Standard. An apparent lightning strike that took out the Grit and Chemical PLC controls on April 5th led to** one new Emergency Response Plan (ERP) in 2023. The fourth internal audit on the WWQMS was in December 2023. The audit found 9 Opportunities for Improvement (OFIs) and had no Non-Conformances. These OFIs are being addressed by the WWQMS Representative in collaboration with the Wastewater Superintendent and Director of Public Works & Engineering, as required. The OFIs are mostly related to documentation.

# **Calibration & Maintenance Summary**

**The following summarizes calibrations, inspections, and other maintenance by 3rd Party Contractors:**

* **Annual fire extinguisher and emergency lights inspection- Georgian Bay Fire & Safety**
* **Annual lifting device inspection- Tradesafe Industrial Inc**
* **Annual backflow/double check valve assembly testing and inspection- Sharah Young, City Backflow Coordinator**
* **Semi-annual gas monitoring and detection system calibrations- Hetek Solutions**
* **Annual flow-meter calibrations- Indus Control**
* **Annual online analyzer and lab instrumentation service, calibration and verification-Hach Sales & Service and SPD Sales**
* **Annual maintenance of BAF compressors- Ingersoll Rand**
* **Annual maintenance and load bank testing of backup power generators- GenWorx**
* **Annual boiler, digester gas and HVAC maintenance/repairs- Maurice Mechanical**
* **Required elevator inspections and maintenance- OTIS**
* **Confined Space and fall arrest equipment annual inspection- Rubicon Safety**
* **SCADA UPS batteries replaced in all Summa supplied PLC systems- Summa Engineering**
* Plant fire inspection by Greg Nicol of Owen Sound Fire Department
* Heat exchanger pump HSD-PMP201 rebuilt- Lynjo Electric Motors, plant staff
* Replaced plant potable water meter and section of leaking 3” PVC pipe-Sharah Young (City Backflow Coordinator/Plumber) and plant staff
* Grit Room water meter changed-Sharah Young
* Re-location of BAF influent analyzers from BAF rooftop to BAF wetwell room-Mike Elder Electric, SPD Sales, Plant Staff
* Emergency PLC panel repairs due to lightning strike-Mike Elder Electric, Summa Engineering, Plant Staff
* Alternating sodium-hypo pump circuit board repairs due to lightning strike-plant staff, Watson-Marlow
* Pole mounted switch gear and transformer inspection and maintenance-Hydro One, Allison Electrical
* Install lost program into PLC of BAF blower #1- Fusion Automation
* Grit system sump pump 901 rebuilt- Lynjo Electric Motors, plant staff
* New bearings installed in Grit & Screen rooftop units- Maurice Mechanical
* Replaced BAF effluent ammonia analyzer probe- SPD Sales
* Repairs to Ortho-Phosphorous analyzer-SPD Sales
* New scum pipe heat trace controls installed- Mike Elder Electric
* Repairs made to sludge loading platform stairs- Caldecott Millwright
* South portion of aeration channel isolated, cleaned with vac truck and new air header piping and diffusers installed- Brian Edwards Transfer, Caldecott Millwright, plant staff
* BAF pump 101 rebuilt- SPL Pumps
* Installation of UPS bypass switches in both Veolia PLC panels and then batteries replaced in both UPS units- Fusion Automation, Ryan Colley of Veolia
* BAF pump 401 rebuilt- SPL Pumps
* **Non-routine maintenance completed by plant staff:**
* Replaced cracked fittings and lines on sodium-hypo pump system
* Changed plunger packing in primary digester transfer pump #2
* Replaced broken shear pins on scum collectors
* Replaced belts on building exhaust fans
* Replaced wear bars in Rotopac
* Odour Control unit PLC replaced due to lightning strike
* Replaced leaking gaskets on process air lines of BAF cell #1 & #2
* Replaced oil seals in gear boxes of clarifiers #3 & #4
* Replaced back-up batteries in PLC’s of all 3 BAF blowers, boilers and odour control
* Replaced all remaining incorrectly installed nozzles in BAF cell hatches
* Replaced batteries in various emergency lights
* New sprockets, chain and flights installed in #2 primary clarifier
* Repairs to lower rails of clarifiers #1 & #2
* Replaced scraper blade on Screen #1

# **2023 Bio-solids Summary**

**Below is a tabulation of the volume and locations where WWTP generated bio-solids were land applied. Approximately 13,500m3 is anticipated to be generated in the next reporting period.**

**The City of Owen Sound works with Saugeen Agri Service Ltd to ensure adequate NASM sites are available for bio-solids application.**

**Table 16 2023 Bio-Solids Land Applied**

|  |  |  |
| --- | --- | --- |
| **Date 2023** | **Receiver Location** | **Volume Applied (m3)** |
| Apr 28-May 11 | Don Houston- Davidson & Northeast Home Farms NASM #24493 | 4082.05 |
| May 12-13 | Unruh Home Farm NASM #60027 | 1521.33 |
| Jul 5th | James Watson NASM #24348 | 1022.26 |
| Jul 5-7 | Jeremy McCoubrey NASM #24492 | 889.49 |
| Oct 3-19 | Curry Kilsyth Farm NASM #23957 | 3795.55 |
| Oct 20-23 | Curry McConnell Farm NASM #23957 | 637.6 |
| Nov 20th | Curry McConnell Farm NASM #24494 | 920.09 |
|   | **Total Volume Applied** | **12868.37** |

**The 2023 Bio-solids production was slightly more than the 2022 volume of 12,542m3.**

# **Leachate**

**Leachate is the liquid that drains or 'leaches' from a landfill. The main leachate concern parameter is ammonia, which the earlier Primary Sewage Treatment plant could not remove. Previously, leachate from the Genoe Landfill was trucked to other Wastewater Plants for treatment. The Secondary upgrade to the WWTP allows The City to accept this material with minimal to no impact on the treated effluent. The leachate is dumped into the Collection System on the industrial collector main near the Public Works Facility. It is conveyed by gravity to the WWTP while mixing with other incoming sewage. This helps prevent any shock to the plant that could be caused by dumping leachate directly into it.**

**20,286m3 of leachate was hauled from the Genoe Landfill and treated by the WWTP in 2023, compared to 16,947m3 in 2022. Treating Leachate internally saves the costs incurred by trucking the substance to neighbouring municipalities for treatment.**

**Table 17- Leachate Volumes 2023**

|  |  |
| --- | --- |
| Month | m3 |
| Jan | 2772 |
| Feb | 2268 |
| Mar | 2173.5 |
| Apr | 2331 |
| May | 1858.5 |
| Jun | 1071 |
| Jul | 315 |
| Aug | 630 |
| Sep | 661.5 |
| Oct | 1795.5 |
| Nov | 2079 |
| Dec | 2331 |
| Total | 20,286 |

#

# **Hydraulic Reserve Calculation**

**A report was originally brought to the Operations Committee in 2022. The calculation is intended** to be updated annually based on changes to developments and flows at wastewater and water treatment plants.

As of January 2024, the calculated wastewater treatment capacity remaining is -5,473 m3/d for the average day. However, it should be noted that this figure is based on conservative variables, assumes full buildout of all known development lands, and is, therefore, very long-term. Several factors could affect the available population growth with the existing treatment capacity, such as but not limited to long-term trends of per capita water consumption and water conservation measures, the effects of climate change, the speed of development buildout, including the uptake of secondary suites/accessory residential units, and inflow and infiltration reduction programs.

More detailed calculations will be undertaken in 2024 to develop hypothetical tipping points and triggers at which time the process should occur to begin planning for a treatment plant expansion. In the meantime, monitoring the actual plant performance will be a better indicator of available capacity.

# **Complaints**

In 2023 there were two (2) customer complaints of sewer odour. Operators followed the SOP and logged these complaints. Operators investigated each situation, the issues were resolved, and the customers were satisfied.

# **By-pass, Spill or Abnormal Discharges**

**There were no bypasses, spills, or abnormal discharges to report from the WWTP in 2023.**

# **Basement Isolation Storm Sewer Disconnection & Weeping Tile Sump Pump Subsidy**

**The City of Owen Sound offers subsidies for the following:**

**Basement Isolation**

Assistance is available to owners of properties that have experienced flooding due to the sanitary sewer or storm sewer surcharging.

**Weeping Tile Disconnection**

Assistance is available to owners of properties that have experienced flooding due to the sanitary sewer or storm sewer surcharging if:

* the weeping tiles of the house are directly connected to the sanitary sewer or,
* the weeping tiles of the house are directly connected to a storm sewer or,
* the sanitary sewer has experienced a surcharge (backup) event.

**In 2023 two (2) properties participated in the above programs.**